DURHAM 1869 CITY OF MEDICINE

CITY OF DURHAM Stormwater Services

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PROTECTING OUR WATERSHEDS - PROTECTING OUR WATER

A Fact Sheet About the Little Lick Creek Watershed Improvement Project

THE LITTLE LICK CREEK WATERSHED IMPROVEMENT PROJECT

The Stormwater and GIS Services Division (within the City of Durham's Public Works Department) began an assessment of the Little Lick Creek Watershed in 2014. As part of this effort, a Watershed Improvement Plan will be produced. The assessment is like a health check-up for a watershed and its streams. The Plan will identify watershed restoration projects to improve the water quality and health of the Little Lick Creek watershed, and create value for communities in the watershed. This Plan is part of the City of Durham's continued efforts to improve the health of our creeks, protect our regional water supply, and comply with water quality regulations.

WE VALUE THE PUBLIC'S INPUT

Public involvement is an important part of the Little Lick Creek Watershed Improvement Plan. The City has engaged communities in the study area through a public meeting, social media (Facebook and Twitter), written communications, and a watershed survey. The City used social media posts to provide project updates and to distribute information such as project fact sheets, preliminary results, and videos.

A public meeting held in May 2014 allowed residents to interact face-to-face with City staff and consultants to give feedback on their experiences in the watershed. Attendees shared helpful information about water quality and drainage issues, flooding, use of creek areas for recreational purposes and general issues affecting the streams and creeks in the watershed. Thirteen surveys completed by meeting attendees revealed that:

84% of attendees believe that the creeks, lakes and other waterways are an asset to the community.

1/2 Nearly half of attendees participate in some form of passive or active recreation in Little Lick Creek.

44% of attendees have observed pollution in creeks in their communities.

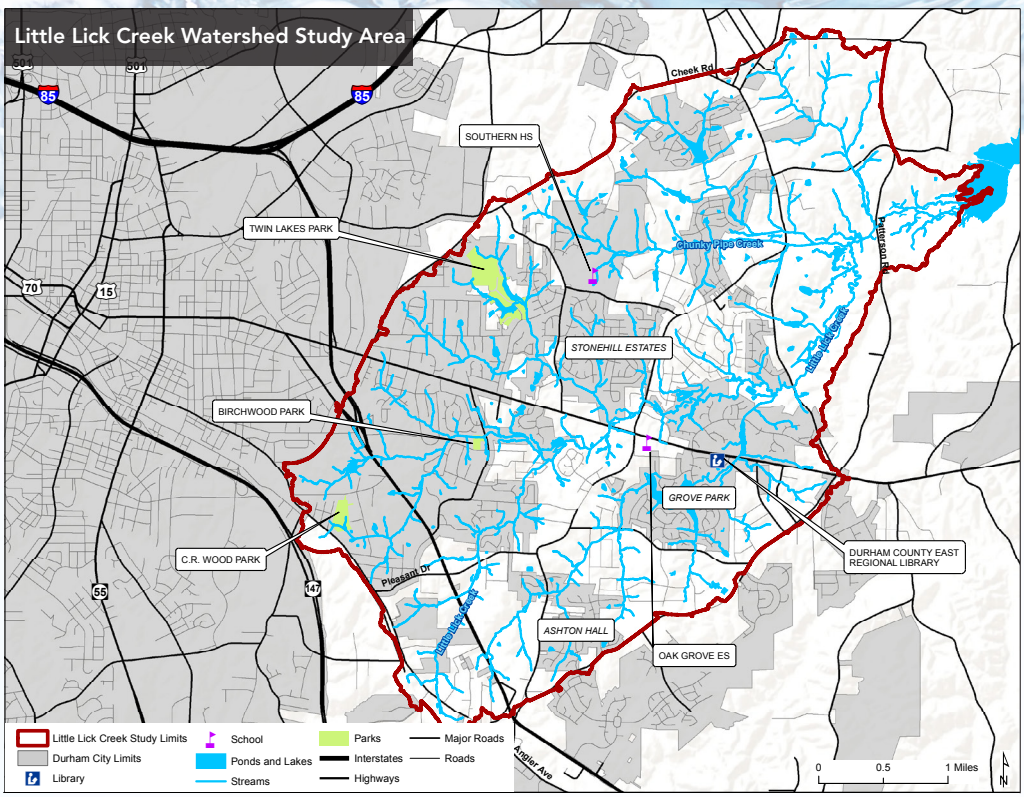
2/3 of attendees want efforts made towards improving water quality and/or recreational opportunities in local waterways.

62% of attendees agreed that they would be willing to participate in watershed improvement activities.

WHAT IS A WATERSHED ASSESSMENT?

The watershed assessment for Little Lick Creek will help to improve our understanding of the watershed's current condition and changes that may occur in the future. The assessment examines how our everyday activities, population growth, and new construction may impact the health of Little Lick Creek. Understanding where the pollution comes from and what we can do to prevent or reduce it is key to improving our water quality.

The watershed assessment for Little Lick Creek has been completed. The results are summarized in this Project Fact Sheet and will be used by the City to identify opportunities to improve the health and water quality in this watershed.



WHAT DO WE KNOW ABOUT THE WATER QUALITY IN LITTLE LICK CREEK?

The City has three monitoring stations on Little Lick Creek that monitor water quality and the health of aquatic communities. Based on our analysis of the data collected at these three stations since 2004, sections of Little Lick Creek have experienced periods with elevated levels of fecal coliform bacteria, heavy metals such as copper, and turbidity. The data also show very low levels of dissolved oxygen and high levels of nutrients, such as nitrogen and phosphorus. As a result, the State of North Carolina has designated sections of Little Lick Creek as an "impaired" waterway due to low oxygen levels and high levels of turbidity. This means that sections of the creek exceed state or federal standards for these parameters.

STATE OF OUR STREAMS REPORT - Each year the City produces a State of Our Streams report. This report summarizes monitoring data collected during the past year. A water quality index between 0 to 100, or Poor to Excellent, is given to each stream assessed. This index provides an easy way to compare the water quality conditions across the City. The latest water quality index rating for Little Lick Creek was 80 (2011). This is a significant increase over the score of 73 that was reported in 2010. The score was higher in 2011 because of a lower amount of bacteria and sediment in the creek.
Visit our State of the Streams webpage: http://bit.ly/stateofourstreams

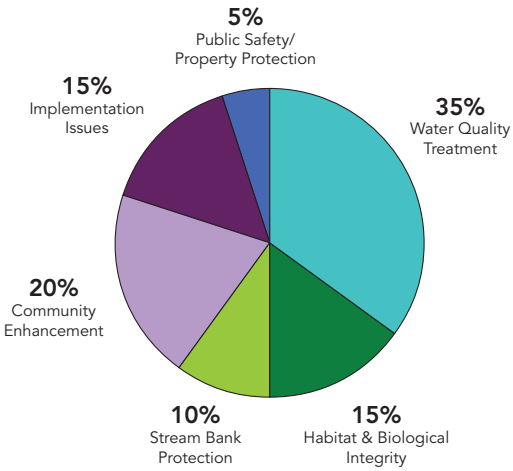
HOW WILL THE CITY DETERMINE THE MOST EFFECTIVE PROJECTS?

Computer models are one of the tools used to evaluate the water quality benefits of potential projects. A combination of two computer-modeling tools will be used on Little Lick Creek - the U.S. Environmental Protection Agency's Stormwater Management Model (SWMM), and the Watershed Analysis Risk Management Framework (WARMF) model. These models help the City examine benefits of projects individually or in combination with other types of pollutant control measures.

Using these modeling tools, "watershed management scenarios" are tested. Scenarios provide an interactive way to build a water quality improvement strategy that combines several projects and measures. These include SCM retrofits, stream restoration projects, and elimination of leaks and spills from the sanitary sewer collection system. The models allow the City to compare the results of many different scenarios to figure out which set of options offers the greatest water quality benefits.

WHAT OTHER FACTORS WILL THE CITY CONSIDER IN THEIR SELECTION PROCESS?

It is important to select projects that provide the most improvements to water quality and watershed health, and that will be economically sound. To determine which projects meet these objectives, the City developed a set of criteria that consider not only water quality benefits and costs, but various other criteria. These criteria are consistent with the City's previous watershed plans and are divided into these six main categories:



WATER QUALITY BENEFITS - It is critical for potential projects to have a positive impact on the overall health of the watershed. This factor carries the greatest weight.

HABITAT AND BIOLOGICAL INTEGRITY - The benefits that a potential project can have on the ecological function of a stream and its ability to support aquatic life are evaluated.

STREAM BANK PROTECTION - This factor assesses the potential reduction of erosion along stream banks during high flows.

COMMUNITY ENHANCEMENT - Factors that enhance the project such as property protection, neighborhood acceptance, opportunities for public education, proximity to schools, and enhancement to existing parks and open space are considered.

IMPLEMENTATION ISSUES - The issues considered are how difficult a potential project will be to implement and cost and schedule, property ownership, compatibility with existing City programs, permitting requirements, potential adverse environmental impacts, and site accessibility for construction, operation, and maintenance.

PUBLIC SAFETY AND PUBLIC PROPERTY CONSIDERATIONS - Considerations are based on the amount of flood protection or flood reduction a potential project can provide to public streets and property.

WHAT TYPES OF PROJECTS OR MEASURES CAN IMPROVE WATER QUALITY?

Many types of watershed improvement projects or measures can be considered to capture and treat pollution sources before they reach our streams. These include:

STORMWATER CONTROL MEASURES (SCMs)
A general term that describes both devices and activities that control the quantity and quality of the stormwater that flows off our land and into our streams.

- **Constructing a new stormwater control measure (SCM) or retrofitting (repairing or modifying) an existing SCM to improve its water quality benefits**- Field Staff identified 17 existing SCMs and 57 new SCM sites as candidates for water quality retrofits.
- **Restoration or enhancement of degraded streams identified by field staff** - Field staff identified 61 sections of Little Lick Creek within the City limits and 31 sections within Durham County that can be restored to improve water quality and ecological functions, totaling over 23 miles of Little Lick Creek.
- **Repairing a malfunctioning septic system or discharging sand filter system** - Of the onsite wastewater treatment systems in Little Lick Creek Watershed, Durham County anticipates that 3% of the 120 septic systems and 7% of the 30 discharging sand filter systems are malfunctioning.
- **Reducing leaks and overflows from sanitary sewers** - Between 2010 and 2013, there were 15 sewage spill incidents investigated by the City, with an estimated total discharge volume of 156,040 gallons.
- **Eliminating sites commonly used for dumping garbage and debris** - Field staff identified 3 locations in this watershed.
- **Identifying and eliminating an "illicit discharge" of pollutants**- Field staff identified 14 pipes discharging into Little Lick Creek from unknown sources.

Modifications to the outlet structure of an existing SCM can improve its water quality benefits.

Example of too much sediment causing water quality impacts in Little Lick Creek.

WHAT ARE THE NEXT STEPS IN OUR STUDY?

Now that the watershed assessment is complete and a number of measures that can improve water quality have been identified, the next steps of the project include:

1. Simulate rainfall, stormwater runoff, and water quality conditions using computer-modeling tools.
2. Evaluate and prioritize each potential water quality improvement project or measure based on the set of criteria described on page 3 of this Project Fact Sheet.
3. Evaluate a series of watershed scenarios that combine water quality improvement projects or measures to determine the most effective water quality improvement.
4. Prepare a draft Watershed Improvement Plan for review and feedback from Durham residents and City officials.

WHEN WILL THE CITY FINISH THE PROJECT?

Key milestones for the project are listed below.

REMAINING PROJECT TASKS	DATES
Watershed modeling of individual projects and watershed scenarios	October - November 2015
Evaluate and prioritize potential water quality improvement projects	December 2015
Develop draft Watershed Improvement Plan	December 2015
Final public / stakeholder meeting	January 2016
Final Watershed Improvement Plan	February 2016

For additional information, please contact the City Project Manager, **Sandi Wilbur** at **Sandra.Wilbur@durhamnc.gov** / **(919) 560-4326 ext.30286,** or **Lance Fontaine** at **Lance.Fontaine@durhamnc.gov** / **(919) 560-4326 ext.30257**

http://durhamnc.gov/960
FACEBOOK: facebook.com/durhamncstormwater
TWITTER: @DurhamStormH2O
Join the conversation with: #LittleLick

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The Volume 1 Fact Sheet about the Little Lick Creek Watershed Improvement Project is available here: http://durhamnc.gov/960